

## Application of biomimetics in x-ray optics

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### Abstract

© 2017 COPYRIGHT SPIE. Downloading of the abstract is permitted for personal use only. The principles of biomimetics were successfully applied in X ray optics in the past and recently, e.g. in Lobster-Eye optical systems. However, the recent growing knowledge of sea vision, especially of peculiar mirror eyes of scallops, crustaceans, and deep sea fishes, makes it possible to consider other such applications. One of the most important discoveries is finding of mirror eyes in deep sea fish *Dolichopteryx longipes* based on large large numbers of very small mirror plates organized in specific positions. This arrangement may even include principles of active optics. We report on ongoing study with focus on understanding of very specific mirror eyes of sea animals and how they may help us to design and develop special optics for scientific applications. We study the ways these mirror eyes work, what are the advantages of these peculiar eye arrangements, and whether these optics can be used in advanced devices, e. g. X-ray optics. We will briefly present and discuss the preliminary results.

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### Keywords

Biomimetics, Fish eye, Lobster eye, X-ray optics, X-ray telescopes

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